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The effects of dramatization method on elementary school students' levels of maths attidutes and achivements

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Abstract

The aim of this study is to investigate the effects of dramatization method on elementary school students' levels of Math's attitudes and achievements. The research is carried out on total 69 students who are in 8th year of elementary school in Istanbul, Anatolian side, and it is continued during the unit "Trigonometry". The lessons are taught traditionally to control group whereas the lessons are taught by using dramatization method in experimental group. Before the research started, pre-test and Math's attitudes questionnaire applied to control and experimental group. At the end of the study, same tests were used again. According to the results of achievement pre-test, post-test and t-test, it is found out that dramatization method is effective on both students' math's achievement and the level of attitudes.

Keywords: Attitude; dramatization; Math's education; achievement; trigonometry.

1. Introduction

Recent studies show us that learning is completed by the interaction of new information and students' own knowledge. According to Osborne (1983), during the learning process; students arrange new information by the help of their own cognitive style, abilities, attitudes, experiences. It can be said that information should be analyzed, evaluated, and made sense in people's minds. So, in the process of education it is aimed to teach, till the end, information will be developed and education occurred by the interaction of teacher and students. Education process should be entire with all levels which includes from concrete experience, observation- reflection, abstract concepts, to generalization and implementing concepts in new situations. Thus, education environment should be equipped

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with methods that students can use their sense organs, gain some concrete experience and learn how to learn. For this reason; activities and teaching methods carry great importance because of teaching Math's subjects. Providing an attractive learning environment, students' participation actively to activities during the process for students Math's learning is more enjoyable. So, dramatization is important for students to gain experience. Dramatization is an animation by casting roles on a subject using gestures, mimics. It is also representation of the events that cannot be experienced by the students as if they can be experienced. Dramatization in education is an activity which provides learners all learning styles as whole and learning by experience these are by movement, active learning, social learning, learning by discussion, emotional learning, collaborative learning, and learning by discover (Koc & Dikici, 2002). A variety of studies shows the positive relationship between the attitudes towards lesson and the success of that lesson. The attitudes of students towards lesson is not only effecting the success or interests but also effecting future field, lessons, jobs selection of students (Koc & Sen, 2006). Especially some students have quite negative opinions about maths because of negative behaviors of teachers or wrong experiences. These students have prejudice such as math's is complex and only those who have a talent for math's can achieve it. This situation is continuing during the school years and students' self-confidence is disappearing. Changing the negative attitudes of students into positive can be provided if the teachers increase the positive experiences of students towards Math's. The aim of this study is investigating the effects of dramatization method on the success levels and attitudes of 8th year elementary school students towards Math's. To reach this aim the following questions asked;

1. Is there any effect of suing dramatization method on learning trigonometric concepts?
2. Does dramatization method affect the levels of attitudes towards learning trigonometric concepts?

Solutions are searched for sub-problems.

2. Method

In this study; experimental design is used and pre-test & post-test are applied to control group. The field study is consisting of 8th year elementary school students who are in two different classes, during 2005-2006 education years in Pendik, Istanbul. There were 69 students in field study. 36 (8/B) of students are experimental, 33 (8/E) of students are control group. When identifying experimental and control groups; pre-test and post-test results were taken into consideration and 2 classes were chosen whose math's attitudes and knowledge levels are close to each other.

2.1 Materials

"Pre-test" and "Math's attitudes questionnaire" were used for the study.

Pre-Test

This test were used to identify the groups related information whether close to each other or not, and the subject is relating to 8th year elementary school students' trigonometry lesson. The test consisted of 25 questions which were chosen from the High School Entrance test between the years 1985-2005. The reliability of test is $\propto$ =0.74

Math's Attitudes Questionnaire

This questionnaire was developed by Nazlıcicek & Erktin (2002) named "Opinions about Math's". There are 20 positive and negative items in the questionnaire. This questionnaire is formed in Likert scale type questions with 5 being responses of Strongly Agree, Agree, Neutral, Disagree, and Strongly Disagree. Alpha reliability coefficient is $\propto$= 0.841. The reliability of Math's questionnaire is $\propto$=0.841.

2.2 Data collection & analysis

In the study Pre-test and Math's attitudes questionnaire was applied to 8A/8B/8E classes students who are chosen in advance. According to the independent groups t-test results was applied to identify whether they are equal or not in terms of the groups academic success and pre-attitude points, 8B and 8E classes in which the points of pre-test and pre-attitudes are not significant statistically, were chosen as field study. Control group and experimental group were chosen randomly. Trigonometry subject taught traditionally to control group but it was taught to experimental group

by dramatization and traditional method. In experimental group; teacher prepared 6 activities before the lesson, by the advice of an expert, towards aimed behaviors and during the lesson, teacher wrote the roles on the board in order to introduce them to students so that students can have the chance of choosing appropriate role for themselves. Before dramatization in the class, teacher explained their roles and chose the students. Before dramatization of problems by students role cards were distributed to students. Experimental group students were given a week in order to prepare the appropriate dialogues and materials for their roles. At the end of the week every group play the role for the problem in class. After dramatization group members expressed the problem operationally and after solving the problem they discussed the different ways of it and whether it was done correctly or not. After discussion group members were asked to create a problem which is appropriate for the role they play and students answered them. Teacher had role as well as students not to digress but to guide students. Also teacher helped the classroom environment to make it more enjoyable so that students can feel confident and play their roles contentedly. While the roles were played in the classroom teacher interfered and explained the subject again if they cannot be understood. Also; teacher asked questions to students to start a discussion and then wrote them on the board because the teacher wanted to analyze the situation and give feedback.

2.3 Results and discussion

During the process the results were evaluated with statistical analysis method. According to the data category independent t-test group in paired comparison between different groups and dependent t-test group in paired comparisons within the same group were applied. Also the significance of experimental and control group is found p < = .05.

3. Results

These results were found statistically from the data;

Table 1: Comparison of pre-test results of Experimental and Control groups

Groups	N	$\bar{x}$	S	sd	t	p
Experimental	36	12.44	4.30	67	0.76	.44
Control	33	11.69	3.71			

p>.05

In pre-test results of experimental group the arithmetic mean is 12.44, standard deviation is 4.30, the result of control group; arithmetic mean is 11.69, standard deviation is 3.71. As it can be seen from table1 there are not any significant differences statistically in 0.05 levels between control and experimental groups. Independent t-test is applied for pre-test in terms of achievement. For this reason, it can be derived from the data that; control and experimental group students related information about the subject is equal.

Table 2: Comparison of the pre-attitudes results of Control and Experimental Groups

Groups	N	$\bar{x}$	S	sd	t	p
Experimental	36	77.97	11.91	67	.96	.34
Control	33	75.27	11.38			

p>.05

At the end of pre-attitude test, the arithmetic mean of experimental group is 77.97, standard deviation is 11.91 and the arithmetic mean of control group is 75.27, standard deviation is 11.38. It can be seen from Table2 that; there are not any significant differences statistically in 0.05 levels between control and experimental groups. Independent t-test is applied for pre-test in terms of achievement. For this reason, it can be derived from the data that; control and experimental group students related information about the subject is equal.

Table 3: Comparison of pre-test and post test results of experimental and control groups

Groups	N	$\bar{x}$	S	sd	t	p
Experimental	36	15.05	4.26			
				67	2.39	.02
Control	33	12.24	5.47			

p<.05

If Table 3 is examined; the arithmetic mean of experimental group is 15.05, standard deviation is 4.26 and the arithmetic mean of control group is 12.24, standard deviation is 5.47. It is found out that there is a significant difference for the benefit of experimental group statistically in 0.05 levels between post test and t-test which is done for the success of experimental and control groups post tests. According to these results; it can be said that, education with the dramatization method affect students' success in Math's in a positive way. For this reason it can be said that, students remember the concepts when they thought about the role plays.

Table 4: Comparison of Pre-Attitude and Post-Attitude results of Control and Experimental Groups

Groups	N	$\bar{x}$	S	sd	t	p
Experimental	36	81.16	14.02			
				67	2.41	.01
Control	33	73.93	11.44			

p<.05

As it can be understood from Table 4 that; the arithmetic mean of experimental group is 81.16, standard deviation is 14.02, and control group's arithmetic mean is 73.93, standard deviation is 11.44. It is found out that there is a significant difference for the benefit of experimental group statistically in 0.05 levels between post test and t-test which is done for the success of experimental and control groups post tests. According to these results; it can be said that, education with the dramatization method affect students' success in Math's in a positive way. For this reason it can be said that, students remember the concepts when they thought about the role plays. For this reason, it can be showed that students perceived dramatization method as a game and their attitudes towards Math's is increasing.

4. Discussion and Recommendations

The result of the study supported by the studies of Genç (2004), Akamca & Hamurcu (2005), Soner (2005), Tural (2005), Ekinözü & Şengül (2006). Although there are a variety of study concerning use of dramatization in various lessons, the studies done by Saab (1987) in abroad, and Ekinözü (2003) and Duatepe & Ubuz (2004); Üredi, Şengül & Gürdal (2003) up country there are not any study about the subject, so it is revealed that there should be researches concerning the use of dramatization in variety subjects of lessons. Especially during elementary school years when the children are learning become more important because of learning by doing and lifelong learning. If we take into account of dramatization method provides consistent learning during the process of concept acquisition we can adapt the method different Maths subjects. It is suggested that researches should be done about the relation

between the dramatization method and anxiety level and persistency in Maths lesson. Furthermore students can find different friend groups during role play so in other lessons dramatization method should be used to increase the social interaction between students.

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